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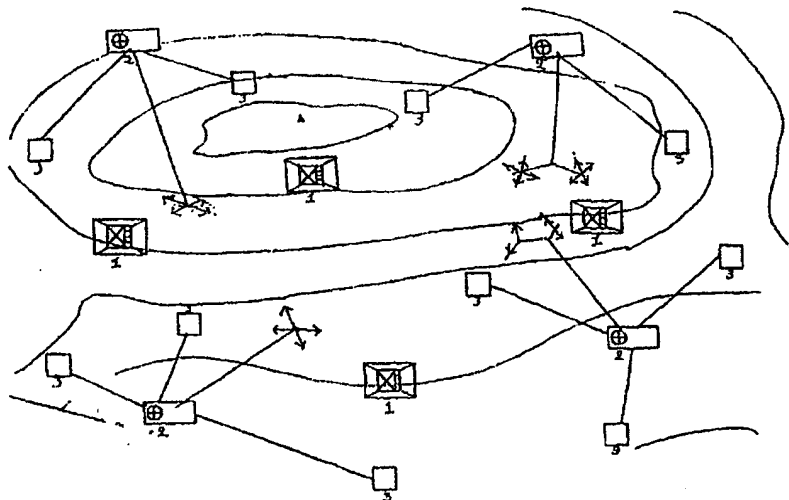
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(54) Title: SYSTEM FOR THE TIMELY EXTINCTION OF FIRES IN FORESTS, NATIONAL PARKS, ZOOLOGICAL GARDENS, ETC.



(57) Abstract

This system is a combination of electronics, computer, automation and drillings for water. It consists of: pillars (f.1) bearing a chamber equipped with a revolving video-camera with a lens, a thermal sensor of infrared radiation and photocell, a special computer processor bearing a special program and a transmitter. A series of scattered drillings (f.2) of water with corresponding pump rooms bearing a receiver, an electromagnetic relay, an electric switch and a time switch. Pipes start from the drillings, at the end of which there is a branching with vertical revolving water sprinkler. The supply of electricity to the drillings comes from the mains-scattered reservoirs (f.3) connected to the drillings through ironpipes and bearing portable pressure pumps.

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D e s c r i p t i o n

SYSTEM FOR THE TIMELY EXTINCTION OF FIRES IN FORESTS, NATIONAL PARKS, ZOOLOGICAL GARDENS, ETC.

During the past few years, more specifically since 1993 to
5 present the extinction of forest fires all over the world,
either by air (aeroplanes, helicopters, etc.), or by land,
(fire engines, forest guards, etc.) has been very cumber-
some. This is due to the many break out points of fire with
devastating results, rendering at the same time human inter-
10 vention very difficult.

The enormous destructions, such as those of Hollywood in 1995.
New Castle, Australia in 1994, Sumatra, Borneo in 1998 were
not only costly but claimed human lives as well.

15 In the most damaging cases, forest fires leave behind them
barren land and upset the equilibrium of environmental eco
systems.

Water bearing underground layers cannot be sufficiently en-
20 riched by rain water- since there are no trees and roots -
and this results in a universal reduction of agricultural pro-
ducts.

The most important fact however is that such destructive forest
25 fires create a thick layer of smoke bearing several particles.
This smoke layer firstly hovers over the fire area but then ,
depending on prevailing high winds, is transferred over popula-
ted areas causing the death of many people as we all know.
Needless to say that this litters the atmosphere excessively
30 and destructively.

The usefulness, therefore, and necessity of timely forest fire
extinction becomes imperative because of the above mentioned
reasons.

For the confrontation of this great problem, a system of compu-
35 ter science, automation and drillings (for water) is suggested.

The combination - planning consists of :

1. Cement pillars, higher than the tree height , scattered within
the forest area. These pillars are equipped with a cement
40 stair case leading to a small chamber (drawing 1).-

This chamber is equipped with several instruments such as a revolving video camera with a lens bearing a thermal sensor of infra red radiation and photo cell, a special electronic computer processor bearing a special program and a transmitter.

2. On the forest area ground there must be a series of drillings scattered around (drawing 2) the depth of which varies according, to the morphology of the ground, as the supply of water from each drilling is always different.

10 Each drilling bears its pump room inside which there is a sign receiver an electromagnetic relay, an electric switch and a time switch.

In addition, each drilling is permanently connected, through a joint, with an iron pipe the length and cross section of which
15 has been specified according to its supply of water.

At the end of the iron pipe there is a branching in two different directions approximately 20 meters in length each.

Each branch is connected - through a joint (head) with a revolving sprinkler installed vertically to the branch,
20 and the height of which varies according the height of the trees and ground morphology. The sprinklers must be grounded (earthed). Outside each pump room there must be a pylon on the upper part of which a plate has been placed with an anemometer (with gauge) and a wind indicator so that the direction and intensity of wind
25 can be observed.

3. More over in the forest areas (drawing 3) there must be scattered reservoirs connected to the drilling through an iron pipe. These reservoirs must always be full of water and the distances between one another should vary according to the supply of water
30 from the drilling. They should also carry portable pressure pumps

The supply of electric energy to the instruments housed in the cement pillars is done by batteries of nominal strength. In the more inaccessible areas the charging of batteries is effected by a accumulator Panel of photovoltaic energy (conversion
35 of solar energy to electrical).

In the drillings themselves, the supply of electric energy is done by electric current (that of towns and cities) via underground cables. This does not exclude the on land supply

of electric energy in inaccessible areas.

How the system operates :

5 In the cementpillars, as soon as the revolving video-camera
teledetects the thermal incident, the infrated radiation
through a photocall is converted to an electric sign ente-
ring the processor of the electronic computer which in turn
processes, filtrates the noises of the sign and if the sign
exceeds the threshold allowed for the manifestation of an
10 incident (fire), then it channels the net sign to the trans-
mitter, inside the chamber.

The transmitter then modulates and wirelessly transmits
the sign of a specific frequency to the receiver of the pump
15 house of the drilling.

The receiver will amplify it and convert it to electric
current capable to put into operation the electromagnetic
Relay of the pump house, and via the electrical switch
the pump of the drilling is set into operation. The pumped
20 up water is delivered to the ironpipes at the end of
which it is distributed through branching in two dire -
ctions and finally it is launched through the revolving
water sprinklers for the extinction of the fire.

Requirements / Claims

System of timely extinction fire forests, Nationals Parks,
Zoologicals Gardens, etc.

5 Claim/Req. 1.

On land planning consists of :

A. Cement pillars (dr.1-) in the chamber of which these is :

- 1) A revolving video-camera with a lens, a thermal sensor of
infra red radiation and a photocell.
- 10 2) A Special electronic computer Processor bearing a special
system .
- 3) A transmitter

B. A layout of drillings (dr.2) with their corresponding pump-
rooms which are equipped with :

- 15 1) A sign receiver
- 2) An electromagnetic Relay
- 3) An electric switch
- 4) A time switch

Each drilling is permanently connected through a joint to
20 an hotizontal ironpipe the length and cross section of which
depends on its supply of water. At the end of the pipe
there is a branching which through a joint is connected to
the water sprinkler. The said sprinkler is installed verti-
cally to the branch and in a hight corresponding to the tree
25 coverage and ground morphology.

The sprinklers are grounded (earthed).

C. The supply of electric current to all pillar instruments
(videocamera, computer, transmitter) as well as to the pump
rooms (sign receiver, electromagnetic Relay and electric
switch except the drillings ; is done by batteries of nominal
30 strength. In the more inaccessible areas of the cementpillars
the charging of batteries is done by a panel of photovol-
taic energy (conversion of solar energy to electric one) .
The supply of electricity to the drilling pumps is done by
alternating current from electricity stations, the cables
35 of which reach the drillings underground.

D. Outside the pumprooms there is a pylon on the plate of
which there is an anemometer and a wind indicator so that

the direction and intensity of the wind can be known.

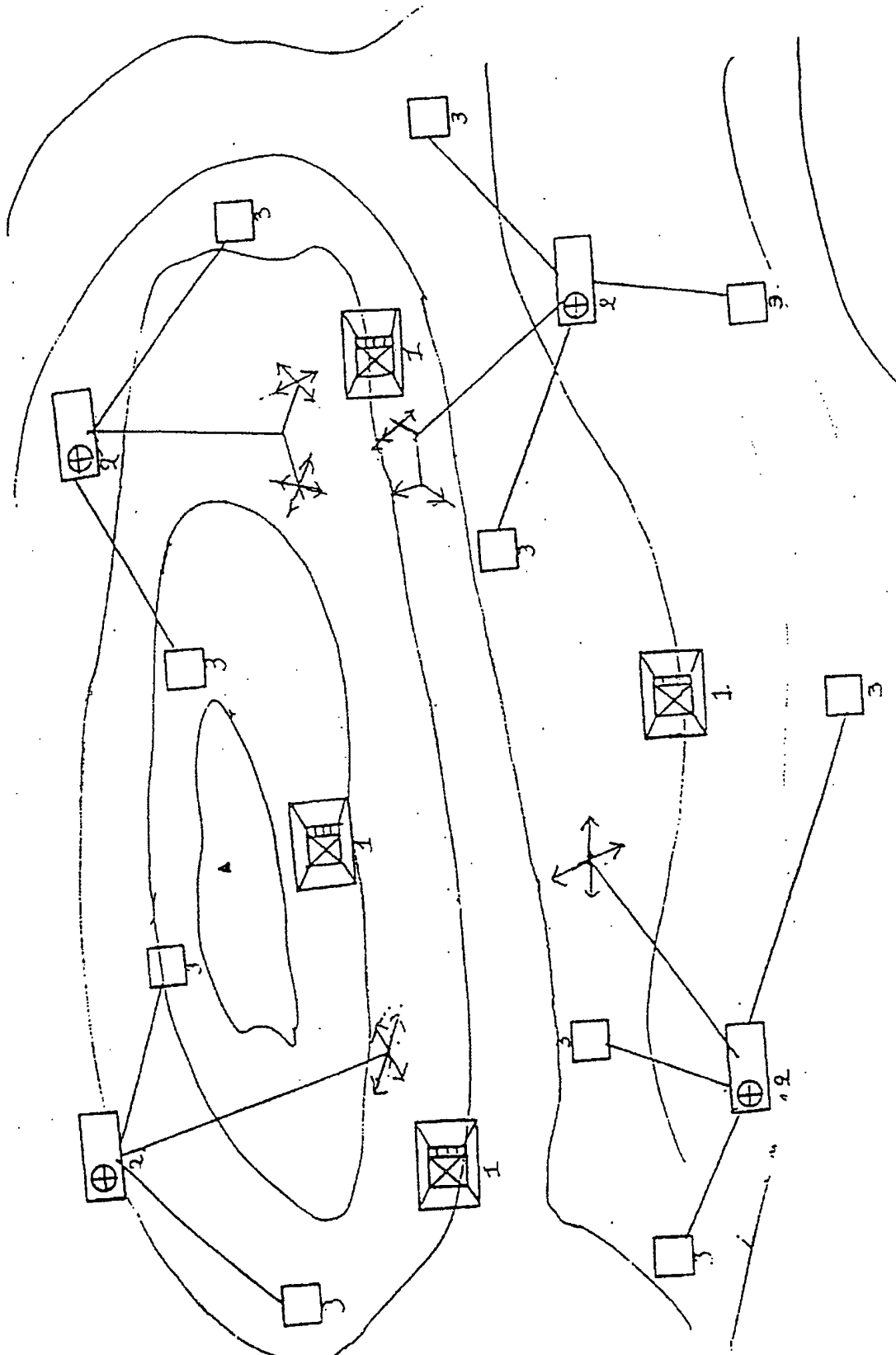
- E. Water reservoirs connected to the drillings (dr.2) with iron-pipe so that they can be fed with water. These reservoirs bear
5 portable pressure pumps connected with a gasoline engine or a petrol motor. The reservoirs are always full of water, scattered and of various capacities.

Claim/Req. II.

- 40 The water reservoirs, as mentioned in Req. I can be used independently (by themselves) in case of need or system blockage.

Claim/Req. III. Way the system operates

- 15 As mentioned in Req. I the system operates as follows :
As soon as the revolving videocamera in the cement pillars teledetects the thermal incident, the infra red radiation through the photocell is converted to an electric sign which enters the processor of the special electronic com-
20 puter which in turn processes and filtrates the noises of the sign.
If the sign exceeds the threshold (limits) allowed for the manifestation of an incident (fire) the Processor channels the net sign to the transmitter inside the chamber.
25 The transmitter in turn modulates and transmits the sign of specific frequency wirelessly to the receiver of the pumproom in the drilling. The receiver will amplify it and convert it to electric current capable of putting into operation the electromagnetic relay of the pump room.
30 The relay through an electric switch puts into operation the pump of the drilling. The water pumped from the drilling is delivered to the ironpipes at the end of which it is distributed through branching in two directions and finally it is launched through the
35 two revolving water sprinklers for the extinction of the fire.



INTERNATIONAL SEARCH REPORT

Int lional Application No

PCT/GR 99/00014

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A62C3/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A62C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 696 939 A (BERTIN & CIE SA) 22 April 1994 see the whole document ---	1-3
A	WO 91 09649 A (LEJOSNE) 11 July 1991 see page 5, line 1 - page 9, line 17; figures ---	1-3
A	EP 0 623 365 A (KAIDONIS) 9 November 1994 see column 3, line 23 - column 5, line 19; figure ---	1-3
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Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/GR 99/00014

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